

What is claimed is:

1. A television signal transmitter comprising:  
a local oscillator for outputting a local oscillation signal;

a mixer for mixing a supplied television intermediate frequency signal with the local oscillation signal and frequency-converting a resultant signal to a television signal of a specific channel through which the signal is to be transmitted among television channels; and

a variable band-pass filter connected at a post stage of the mixer and tuned to a frequency of the specific channel,

wherein a tuning frequency of the variable band-pass filter can be shifted to a frequency out of a frequency band of the specific channel.

2. A television signal transmitter according to claim 1, wherein the variable band-pass filter is tuned in a range from a first frequency to a second frequency, the specific channel is set between the first frequency and the second frequency, and a frequency out of the band is lower than the first frequency or is higher than the second frequency.

3. A television signal transmitter according to claim 2, wherein when the frequency of the specific channel is higher than a middle frequency between the first and second frequencies,

the frequency out of the band is set to be equal to or lower than the first frequency, and when the frequency of the specific channel is lower than the middle frequency, the frequency out of the band is set to be equal to or higher than the second frequency.

4. A television signal transmitter according to claim 1, wherein the local oscillator is provided with a first varactor diode for changing the frequency of the local oscillation signal, the variable band-pass filter is provided with a second varactor diode for changing the tuning frequency, the television signal transmitter further comprises: a memory in which data for setting the frequency of the local oscillation signal and the tuning frequency is stored; a D/A converter for converting the data into a d.c. voltage; a first external power source; voltage adding means to which the d.c. voltage is supplied; and first switching means, the d.c. voltage is applied to the first varactor diode, a voltage outputted from the voltage adding means is applied to the second varactor diode, and the voltage of the first external power source is enabled to be applied to the voltage adding means by the first switching means.

5. A television signal transmitter according to claim 2, wherein the local oscillator is provided with a first varactor diode for changing the frequency of the local oscillation signal,

the variable band-pass filter is provided with a second varactor diode for changing the tuning frequency, the television signal transmitter further comprises: a memory in which data for setting the frequency of the local oscillation signal and the tuning frequency is stored; a D/A converter for converting the data into a d.c. voltage; a first external power source; voltage adding means to which the d.c. voltage is supplied; and first switching means, the d.c. voltage is applied to the first varactor diode, a voltage outputted from the voltage adding means is applied to the second varactor diode, and the voltage of the first external power source is enabled to be applied to the voltage adding means by the first switching means.

6. A television signal transmitter according to claim 3, wherein the local oscillator is provided with a first varactor diode for changing the frequency of the local oscillation signal, the variable band-pass filter is provided with a second varactor diode for changing the tuning frequency, the television signal transmitter further comprises: a memory in which data for setting the frequency of the local oscillation signal and the tuning frequency is stored; a D/A converter for converting the data into a d.c. voltage; a first external power source; voltage adding means to which the d.c. voltage is supplied; and first switching means, the d.c. voltage is applied to the first varactor diode, a voltage outputted from the voltage adding

means is applied to the second varactor diode, and the voltage of the first external power source is enabled to be applied to the voltage adding means by the first switching means.

7. A television signal transmitter according to claim 1, wherein the local oscillator is provided with a first varactor diode for changing the frequency of the local oscillation signal, the variable band-pass filter is provided with a second varactor diode for changing the tuning frequency, the television signal transmitter further comprises: a memory in which data for setting the frequency of the local oscillation signal and the tuning frequency is stored; a D/A converter for converting the data into a d.c. voltage; a second external power source; a third external power source; and second switching means, the d.c. voltage is applied to the first varactor diode, and one of the d.c. voltage, a voltage of the second external power source, and a voltage of the third external power source can be applied to the second varactor diode by the second switching means.

8. A television signal transmitter according to claim 2, wherein the local oscillator is provided with a first varactor diode for changing the frequency of the local oscillation signal, the variable band-pass filter is provided with a second varactor diode for changing the tuning frequency, the television signal transmitter further comprises: a memory in which data for

setting the frequency of the local oscillation signal and the tuning frequency is stored; a D/A converter for converting the data into a d.c. voltage; a second external power source; a third external power source; and second switching means, the d.c. voltage is applied to the first varactor diode, and one of the d.c. voltage, a voltage of the second external power source, and a voltage of the third external power source can be applied to the second varactor diode by the second switching means.

9. A television signal transmitter according to claim 3, wherein the local oscillator is provided with a first varactor diode for changing the frequency of the local oscillation signal, the variable band-pass filter is provided with a second varactor diode for changing the tuning frequency, the television signal transmitter further comprises: a memory in which data for setting the frequency of the local oscillation signal and the tuning frequency is stored; a D/A converter for converting the data into a d.c. voltage; a second external power source; a third external power source; and second switching means, the d.c. voltage is applied to the first varactor diode, and one of the d.c. voltage, a voltage of the second external power source, and a voltage of the third external power source can be applied to the second varactor diode by the second switching means.